(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 14 October 2004 (14.10.2004)

PCT

(10) International Publication Number WO 2004/088764 A3

(51) International Patent Classification⁷:

H01L 51/40

(21) International Application Number:

PCT/GB2004/001471

(22) International Filing Date: 2 April 2004 (02.04.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 0307746.8

3 April 2003 (03.04.2003) GB

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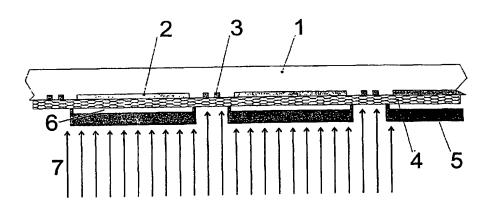
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 20 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ION BEAM METHOD FOR REMOVING AN ORGANIC LIGHT EMITTING MATERIAL



(57) Abstract: A method of removing an organic, preferably polymeric, light-emitting material (4) from defined areas of a substrate (1) comprises the steps of arranging a shadow mask (5) to overlie the organic material other than in the defined areas, and applying a beam of ions (7) to the defined areas through the mask. The method is useful in forming organic light-emitting diode arrays.

INTERNATIONAL SEARCH REPORT

onal Application No PCT/GB2004/001471

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H01L51/40

C. DOCUMENTS CONSIDERED TO BE RELEVANT

CORRECTED VERSION

Relevant to claim No.

According to International Patent Classification (IPC) or to both national classification and IPC

Minimum documentation searched (classification system followed by classification symbols) I PC 7 H01L

Category • Citation of document, with indication, where appropriate, of the relevant passages

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

x	WO 98/21755 A (GRAHAM TERESITA LIEN SHUI CHIH ALAN (US); IBM ANGELOPO) 22 May 1998 (1998-05-page 2, paragraph 3 page 20, paragraph 2 page 31, paragraph 4 - page 32 1 page 33, paragraph 2 - page 35 18,19 page 36, paragraph 3 page 37, paragraph 2 - page 38 1; claims 88,91,93,98,119-121;	(US); -22) , paragraph ; figures . paragraph	1,2,4,9, 11,12			
Υ	22,23	-/	2,3,5-8, 10,12			
X Furt	ner documents are listed in the continuation of box C.	X Patent family members are listed	in annex.			
"A" docume consid "E" earlier of filing d "L" docume which citation "O" docume other of the region o	ent defining the general state of the art which is not fered to be of particular relevance document but published on or after the international late ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another nor other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but han the priority date claimed	or priority date and not in conflict with cited to understand the principle or the invention "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the de "Y" document of particular relevance; the cannot be considered to involve an indocument is combined with one or ments, such combination being obvicin the art. "&" document member of the same patent	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "8" document member of the same patent family			
	actual completion of the international search 7 November 2004	Date of mailing of the international sea				
	mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Klopfenstein, P				

INTERNATIONAL SEARCH REPORT

iB2004/001471

	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Category °	Свания от сосыпень, with пильсанов, where appropriate, со the relevant passages	
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) -& JP 11 074084 A (TORAY IND INC), 16 March 1999 (1999-03-16) abstract paragraph '0005! - paragraph '0006! paragraph '0009! - paragraph '0011!	1,2,4,9,
Y	paragraph 0009: - paragraph 0011.	3,5-8, 10,12
X	US 5 953 585 A (MIYAGUCHI SATOSHI) 14 September 1999 (1999-09-14) column 1, line 5 - line 17 column 1, line 42 - line 54 column 1, line 55 - column 2, line 22 column 2, line 61 - column 3, line 62;	1,4,9,11
Y	figures la-ld	2,3,5-8, 10,12
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 10, 17 November 2000 (2000-11-17) -& JP 2000 192224 A (ROHM CO LTD), 11 July 2000 (2000-07-11) abstract paragraph '0006! - paragraph '0013!; figures 13a-13d paragraph '0015! - paragraph '0016! paragraph '0029! - paragraph '0031!; figures 1a,6c paragraph '0054! - paragraph '0057!; figures 6a-6c	3
Υ	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 11, 30 September 1999 (1999-09-30) -& JP 11 167987 A (NEC CORP), 22 June 1999 (1999-06-22) abstract paragraph '0006! paragraph '0009! - paragraph '0011!; figures 3,4,7	3
Y	PATENT ABSTRACTS OF JAPAN vol. 0091, no. 57 (P-369), 2 July 1985 (1985-07-02) -& JP 60 033501 A (KOGYO GIJUTSUIN; others: 0J), 20 February 1985 (1985-02-20) abstract	5,6
Y	US 4 233 109 A (NISHIZAWA JUNICHI) 11 November 1980 (1980-11-11) column 1, line 11 - line 43 column 3, line 3 - line 42	7,8

INTERNATIONAL SEARCH REPORT

... anal Application No /GB2004/001471

Patent document cited in search report		Publication date	Patent family member(s)		Publication date	
WO 9821755	Α	22-05-1998	EP	0953213	A2	03-11-1999
3021.00			JP	2000505249	7	25-04-2000
		•	TW	557386		11-10-2003
			WO	9821755		22-05-1998
		_	US	6331356	B1 	18-12-2001
JP 11074084	Α	16-03-1999	NONE			
US 5953585	Α	14-09-1999	JP	9293589	A	11-11-1997
JP 2000192224	Α .	11-07-2000	NONE			
JP 11167987	Α	22-06-1999	JP	2848384	B2	20-01-1999
JP 60033501	Α	20-02-1985	NONE			
US 4233109	Α	11-11-1980	JP	1231795	С	26-09-1984
			JP	52088238	Α	23-07-1977
			JP	59004506		30-01-1984
			JP	1121861		12-11-1982
			JP	53028377		16-03-1978
			JP	57003213		20-01-1982
			JP	1121862		12-11-1982
			JP	53028378		16-03-1978
			JP	57003214		20-01-1982
			US	4371412	A	01-02-1983